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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,348	03/24/2004	Kosuke Takasaki	Q80473	5375

23373 7590 04/24/2007  
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WASHINGTON, DC 20037

EXAMINER
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ISAAC, STANETTA D

ART UNIT	PAPER NUMBER
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2812

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

WS

<b>Office Action Summary</b>	<b>Application No.</b> 10/807,348	<b>Applicant(s)</b> TAKASAKI ET AL.	
	<b>Examiner</b> Stanetta D. Isaac	<b>Art Unit</b> 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 February 2007.  
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.  
 4a) Of the above claim(s) 17-22 is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-16 and 23 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This Office Action is in response to the Remarks filed on 2/20/07. Currently, claims 1-16 and 23 are pending.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The rejection of claims 1-16 and 23 under 35 U.S.C. 103(a) as being unpatentable over Hashimoto US Patent 7,001,797 in view Shimoda et al., US Patent 6,887,650 has been maintained for reasons of record.

Hashimoto discloses the semiconductor method substantially as claimed. See figures 1A-14B, and corresponding text where, Hashimoto shows, pertaining to claim 1, a method for manufacturing a solid-state imaging device by adhering a transparent substrate, in which a plurality of frame-shaped spacers are formed, via an adhesive to a wafer on which plural solid-state imaging elements are formed, and by dividing the transparent substrate and the wafer for each solid-state imaging element, each of the solid-state imaging elements of the wafer being surrounded by each of the plurality of spacers, the method comprising the steps of: the adhesive is applied to the plurality of spacers 44 formed on the transparent substrate 42 (figure 1A, 1B; 3 and 4; col. 5, lines 33-39); applying pressure to the transparent substrate, which is adhered to the plurality of spacers formed on the transparent substrate (figure 1A; col. 5, lines 35-39). In

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addition, Hashimoto shows, pertaining to claim 10, further comprising the step of carrying out surface modification to the surface of the spacer to which the adhesive is applied (col. 5, lines 40-52). Also, Hashimoto shows, pertaining to claim 16, wherein the spacer is bonded to the wafer over the surface to which the adhesive is applied (figure 5A; col. 5, lines 53-64).

However, Hashimoto fails to show, pertaining to claim 1, adhering a transfer member to which the adhesive is applied and releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate. In addition, Hashimoto fails to show, pertaining to claims 2 and 3, wherein the transfer member is a rigid body such as a glass plate. Also, Hashimoto fails to show, pertaining to claims 4 and 5, wherein the transfer member is an elastic body such as a flexible plastic film. Hashimoto fails to show, pertaining to claim 6, wherein the transfer member is peeled off such that the angle between the transfer member and the transparent substrate is kept constant. In addition, Hashimoto fails to show, pertaining to claim 7, further comprising the step of forming a ridged pattern or a recess pattern in the transfer member, the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent substrate. Also, Hashimoto fails to show, pertaining to claim 8, further comprising the step of applying a release agent on the surface of the transfer member. Hashimoto fails to show, pertaining to claim 9, wherein the release agent is silicon. In addition, Hashimoto fails to show, pertaining to claim 12, wherein the adhesive is applied to the transfer member by bar coating, blade coating or spin coating. Also, Hashimoto fails to show, pertaining to claim 13, wherein pressure is applied to the transfer member and the transparent substrate by air pressure or roller pressure. Finally, Hashimoto fails to show, pertaining to claim 23, further comprising

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the step of bonding the wafer to the transparent substrate by pressing the wafer and the plurality of spacers formed on the transparent substrate, wherein the adhesive transferred from the transfer member onto the plurality of spacers bonds the plurality of spacers to the wafer.

Shimoda teaches, in figures 1-42, and corresponding text, a similar method of manufacturing a semiconductor device where an peeling layer (adhesive material) is formed on a transfer destination substrate (figures 4A-1 and, 20A-20D; col. 17, lines 35-67; col. 18, lines 1-67, examples of peeling layers; col. 42, lines 49-67; col. 43, lines 1-57).

It would have been obvious to one of ordinary skill in the art to substitute, the following steps of: adhering a transfer member to which the adhesive is applied and releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate; wherein the transfer member is a rigid body such as a glass plate; wherein the transfer member is an elastic body such as a flexible plastic film; wherein the transfer member is peeled off such that the angle between the transfer member and the transparent substrate is kept constant; further comprising the step of forming a ridged pattern or a recess pattern in the transfer member, the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent substrate; further comprising the step of applying a release agent on the surface of the transfer member; wherein the release agent is silicon; wherein the adhesive is applied to the transfer member by bar coating, blade coating or spin coating; wherein pressure is applied to the transfer member and the transparent substrate by air pressure or roller pressure; further comprising the step of bonding the wafer to the transparent substrate by pressing the wafer and the plurality of spacers formed on the transparent substrate, wherein the adhesive transferred

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from the transfer member onto the plurality of spacers bonds the plurality of spacers to the wafer, in the method of Hashimoto, pertaining to claims 1-9, 12, 13 and 23, according to the teachings of Shimoda, with the motivation that, a transfer member, as taught by Shimoda, can be included in the formation of the adhesive layer on the spacers. In addition, both Hashimoto and Shimoda teach bonding the transparent substrate and a wafer substrate by using spacers that have an adhesive material formed thereon. Therefore, transferring the adhesive on the spacers that includes a transfer member would prove to be equivalent, since the ultimate goal would be to form an adhesive material onto the spacers, for the purpose of later bonding the transparent substrate and the wafer substrate together.

It would have been obvious to one of ordinary skill in the art to incorporate, the following steps of: wherein the viscosity of the adhesive is 0.1 Pa·S or more when the adhesive is applied to the transfer member; wherein the viscosity of the adhesive is 100 Pa·S when the adhesive is transferred to the spacer from the transfer member; wherein the adhesive has the thickness from 0.5  $\mu\text{m}$  to 5.0  $\mu\text{m}$  after the adhesive is activated, in the method of Hashimoto, pertaining to claims 11, 14 and 15, according to the combined teachings of Hashimoto in view of Shimoda, with the motivation that Hashimoto in view of Shimoda teach the formation of an adhesive layer formed on spacers. Therefore, having the above viscosities and thickness would result in routine experimentation.

### ***Response to Arguments***

Applicant's arguments filed 2/20/07 have been fully considered but they are not persuasive. In the Remarks on pages 2-9:

Applicant raises the clear issue as to whether Hashimoto in view of Shimoda suggests, adhering a transfer member to which the adhesive is applied and releasing the transfer member from the transparent substrate to transfer the adhesive...onto the plurality of spacers.

The Examiner takes the position that based on the combined teachings of Hashimoto in view of Shimoda the above limitation is obtained. Specifically, Hashimoto teaches that the adhesive is applied to at least one of the spacers 34 and the substrate (col. 5, lines 40-47). In addition, the adhesive may include a thermoplastic resin (col. 5, lines 43-45). Hashimoto only fails to show, the use of a *transferring member* (intentionally emphasized) to apply the adhesive to the spacer or the substrate. Therefore, Shimoda provides an example a transfer member (peeling layer) for applying the adhesive, for the purpose of bonding the transfer bodies to an appropriate destination substrate. The use of the transferring member would prove to be equivalent in its functionality of bonding the two surfaces with an adhesive, since ultimately the goal is to form an adhesive material onto the spacers and to later bond the two substrates (including the spacers) to each other.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanetta D. Isaac whose telephone number is 571-272-1671. The examiner can normally be reached on Monday-Friday 9:30am -6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stanetta Isaac  
Patent Examiner  
April 17, 2007

  
MICHAEL LEBENTRITT  
SUPERVISORY PATENT EXAMINER